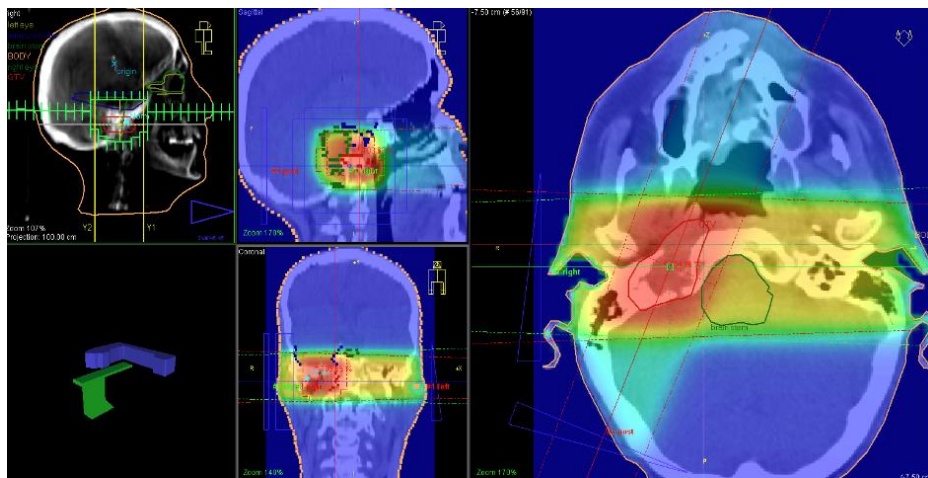




## Abstract

The field of medical dosimetry has experienced advancements in recent years. One of the advancements has been in the educational requirements experienced medical dosimetrists. Certification is highly recommended to practice medical dosimetry. This study sought to determine if degree level has an impact on certification exam pass rates in medical dosimetry.



## Objectives

The question that this study is seeking to answer is:

Are degree level, geographic location of the program, number of individuals who took the certification exam, and current JRCERT accreditation status significant predictors of medical dosimetry certification exam pass rates?



## Methodology

**Study Design:** This study was a quantitative-correlational-retrospective study (Jacobsen, 2012; Gay, 2009).

**Target population:** The target population was 17 JRCERT accredited medical dosimetry programs in the United States. Using an effect size of  $f^2 = 0.25$ , a type 1 error rate of  $\alpha = 0.05$ , and a power of 0.80, the suggested sample size was 40. This resulted in actual power of .0503.

**Data Collection:** Data was collected from the JRCERT, OMB, and programmatic websites (JRCERT, 2020; United States Census Bureau, n.d).

**Data Analysis:** Multiple linear regression tests were used to analyze the data which was done by the statistical program SAS version 9.4.

## Results

*Medical Dosimetry (Entire Model F-test containing all parameters before backward selection)*

Source	DF	Sums of Squares	Mean Square	F	P-value	R <sup>2</sup>
Model	5	0.0221	0.0044	1.19	0.3936	.4261
Error	8	0.0297	0.0037			
Corrected total	13	0.0518				

*Medical Dosimetry (Entire Model Type III Sums of Squares containing all parameters before backward selection)*

Source	DF	Sums of Squares	Mean Square	F	P-value	R <sup>2</sup>
Model	1	0.0114	0.0114	3.3700	0.0913	.2193
Error	12	0.0405	0.0034			
Corrected total	13	0.0518				

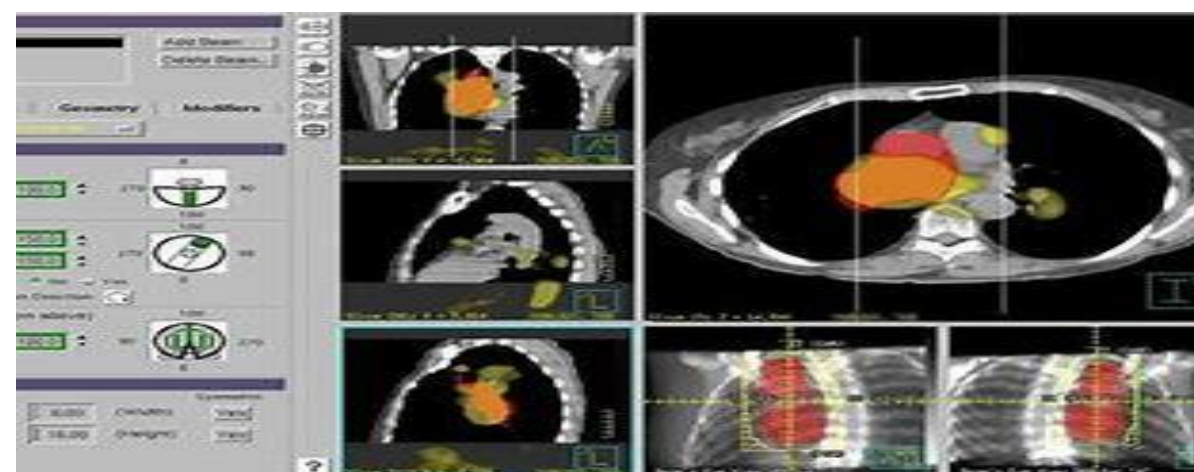
*Medical Dosimetry (Final Model F-test containing only parameters which met the backward selection criterion)*

Source	DF	Sums of Squares	Mean Square	F	P-value	R <sup>2</sup>
Model	1	0.0114	0.0114	3.3700	0.0913	.2193
Error	12	0.0405	0.0034			
Corrected total	13	0.0518				

*Medical Dosimetry (Final Model Type III Sums of Squares containing only parameters which met the backward selection criterion)*

Variable	DF	Type III SS	Mean Square	F	P-value
Number of examinees	1	0.0114	0.0114	3.37	0.0913

The results showed that none of the parameters analyzed for medical dosimetry were significant predictors of medical dosimetry certification pass rates.



## Limitations/Implications for future research/Conclusion

### Limitations

This study has a small sample size (17 medical dosimetry programs). Lastly, there have not been any studies published to date that address certification exam rates among varying degree levels in medical dosimetry. This makes it impossible to compare the results of this study to previous studies in the fields.

### Implications for future research

As a study such as this has never been done in medical dosimetry, it is a novel approach to researching certification exam pass rates. This study yielded interesting results for number of examinees for medical dosimetry. The number of examinees explains 21.93% of the variability of medical dosimetry certification exam pass rates. In further analysis of the JRCERT accredited medical dosimetry programs, it was found that the number of examinees by degree level was comparably different. For master's degree programs the five-year average number of examinees 78.5 or 15.7 annually, bachelor's degree programs had 43.7 examinees or 8.74 annually, and certificate programs had 14.75 or 2.95 annually. While degree level and the number of examinees was not found to be statistically significant, this should be further researched along with the percentage of variation in medical dosimetry certification exam pass rates.

### Conclusion

Certification in medical dosimetry is becoming more required to practice. It is imperative that medical dosimetry programs are graduating competent students who can pass their certification exam to help combat the workforce shortage that is occurring in radiation oncology. Also, upon further analysis, the number of examinees varied greatly among degree level. As the educational mandates for medical dosimetry are recent (2017), future research will need to be done to determine the impact of these mandates.

## References

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